

R E M A R K S

Claims 11-30 are in the case. The Specification has been amended. This amendment to the Specification corrects an obvious error in that, as pointed out in the last sentence of Page 1, BrCl can be fed to a water system "where immediate hydrolysis occurs to yield HOBr." In addition, in the sentence on Page 2 immediately following the amendment, it is made clear that the solutions referred to in the amended sentence involves mixing BrCl with an aqueous solution, and that the resulting solution contains active bromine rather than BrCl.

I. General Remarks

A.

The only rejections in this application prior to declaration of Interference No. 105,230 were double-patenting rejections over U.S. Patent No. U.S. 6,068,861 and Application No. 09/442,025. Terminal Disclaimers over these two documents were filed, rendering the double-patenting rejections moot.

At the conclusion of Interference No. 105,230, the Board instructed the Examiner to enter a rejection of the claims (as they stood at the time) as anticipated by Goodenough alone and as obvious over Goodenough in view of Exhibits 1001, 1073, 2014, 2021, 2022, and 2023; such actions are permitted by 37 C.F.R. §41.127 (see also M.P.E.P. §2308). Applicants did have opportunities to respond to the rejection, and this rejection set forth by the Board was overcome by the Response filed on August 4, 2009, and the accompanying Declaration filed therewith.

After submission of the Response of August 4, 2009, an Office Action (mailed on October 8, 2009) containing only §112 rejections was received. A Response thereto was filed on January 8, 2010. In the next Office Action (mailed on March 30, 2010), a new ground of rejection of the claims was presented, namely that all of the claims were obvious over Goodenough in view of Dallmier.

B.

The claims in the present case remain rejected under 35 U.S.C. §103(a) over the combination of Goodenough et al. (U.S. 3,558,503) and Dallmier et al. (U.S. 5,683,654).

Three reasons for maintaining the rejection are argued in the Office Action. These reasons are:

1. The combination of Goodenough et al. and Dallmier et al. makes the present claims obvious.
2. Goodenough et al. inherently produces BrCl.
3. Applicants have not made a showing, in particular a side-by-side comparison, with Goodenough et al.

Applicants maintain that the rejection is improper and should be withdrawn. The basis for the impropriety of the rejection as argued in previous Responses and further detailed below are:

1. The combination of Goodenough et al. and Dallmier et al. is improper and therefore a *prima facie* case of obviousness does not exist.
2. Goodenough et al. cannot and does not produce BrCl.
3. Applicants have made a showing, which in fact was a side-by-side comparison with Goodenough et al.

While Applicants believe that the above points refuting the reasons for rejection have been set forth convincingly in prior Responses, with evidence (Declarations were filed on August 4, 2009, and August 1, 2011), the substance of the rejection and various remarks made in the Office Action are addressed in detail below.

II. Regarding the Rejection Itself

The Office continues to reject present claims, despite concrete showings and scientifically sound arguments presented in support of the patentability of the present claims. As alluded to above, because most of the substance of the rejection in the present Office Action is essentially the same as that since at least the Office Action mailed on March 30, 2010, most of the substance of the Response to Arguments section, and the points made herein, are substantially similar to those in previous Responses. At a minimum, any point not discussed herein is addressed by the remarks made in the previous Response, which are incorporated herein by reference. We respectfully submit that the rejection of Claims 11-30

over Goodenough in view of Dallmier is erroneous and untenable for these additional reasons.

Goodenough provides a stabilized aqueous solution derived from Br₂ and an alkali or alkaline earth sulfamate. Goodenough discloses that the stabilized aqueous solutions are made from elemental bromine and an alkali or alkaline earth metal sulfamate and have a pH "ranging from about 8 to about 10" (column 2, lines 5-6). Dallmier discloses stabilized aqueous solutions of an alkali or alkaline earth metal hypobromite made from a water soluble bromide ion source and an alkali or alkaline earth metal hypochlorite, the final solutions having a pH as high as 14.

A.

The combination of Goodenough and Dallmier is improper. A reference must be considered for all that it teaches, *Beckman Instruments v. LKB Produkter AB*, 892 F.2d 1547, 1551, 13 U.S.P.Q.2d 1301, 1304 (Fed. Cir. 1989), including portions that teach away from combination. When the teachings of both Goodenough and Dallmier are considered as a whole, rather than selecting individual portions therefrom, it is clear that the rejection is based on a pair of references which are inconsistent with each other.

1.

To prop up the present rejection, the Office Action attempts to find support in Interference No. 105,230, the Interference that involved the present application.

[T]he Board of Interferences supports the combination of Goodenough et al. and Dallmier et al. The Board considered the fact that Dallmier et al. use bromide salt, Goodenough et al. use bromine and instant invention uses BrCl, but still used the combination of Dallmier et al. and Goodenough et al. to support the rejection of the instant claims. (Office Action, Page 7, lines 18-22.)

Paper No. 78 of Interference No. 105,230, the Paper discussed in the Response filed on August 1, 2011, does not mention the Dallmier reference at all. Paper No. 78 refers to the decision of September 13, 2005, which is Paper No. 73 of Interference No. 105,230. Paper No. 73 does consider Dallmier (Page 15-16, paragraph 32; Page 42, last two lines, to Page 43, line 2). Goodenough separately is considered in Paper No. 73; (Page 11, paragraph 24; Page

39 , lines 3-6; Page 52, last 4 lines, to middle of Page 53). At no point in Paper No. 73 are Dallmier and Goodenough considered in combination. The Examiner is respectfully asked to point to the Paper in Interference No. 105,230 that provides such support, so that Applicants can properly respond thereto.

Merely because the Board recommended entry of a rejection at the conclusion of an Interference does not mean that the particular rejection set forth was correct, nor that the claims were unpatentable or remain unpatentable, especially in light of subsequent claim amendments and evidence (such as experimental results presented in subsequent Declarations) submitted in response to the rejection. On this point, Applicants note that the present Office Action appears to state that the rejection that had been withdrawn in response to the Response filed on August 4, 2009, is reinstated (Office Action, Page 8, lines 1-2); however, as this passage is in the Response to Arguments section of the Office Action, Applicants hereby request clarification as to whether this rejection (Goodenough in combination with several exhibits from the Interference) has in fact been reinstated, the reason(s) therefor, and an opportunity to respond thereto, preferably in the context of a Response to a non-Final Office Action.

In connection with recommending the rejection, the Board cited the rule authorizing their action:

37 C.F.R. § 41.127(c) provides:

(c) Recommendation. The judgment may include a recommendation for further action by the examiner or by the Director. If the Board recommends rejection of a claim of an involved application, the examiner must enter and maintain the recommended rejection unless an amendment or showing of facts not previously of record is filed which, in the opinion of the examiner, overcomes the recommended rejection. (Underscoring added by Board; italics added by the undersigned.)

Applicants submit that the amendments and showing of fact made that were not previously of record overcome the recommended rejection. Applicants submit that the withdrawal of the rejection by the Examiner after the Response and Declaration filed on August 4, 2009, signify that in the opinion of the Examiner, the rejection of the claims over Goodenough and several exhibits from the Interference has been overcome.

As Paper No. 73 mentioned, Claims 1-5 of Party Moore (the present Applicants) were not involved in the Interference (Page 3, item 6). Claims 1-5 were directed to processes for producing biocidal compositions. Claims 6-10, which were involved in the Interference, were directed to stabilized bromine-based biocides prepared in a specific manner. As noted above, Claims 11-30 are in the case; Claims 1-10 have been cancelled. To demonstrate that the present claims are different than the cancelled claims, the independent claims are compared. Below, cancelled Claim 1 is shown with strikethrough of the words that do not appear in present Claim 11, the independent process claim. In Claim 11, the underlined words are those that did not appear in Claim 1.

~~1. A process of producing a concentrated stabilized biocidal composition which comprises adding bromine chloride to an overbased, aqueous alkali metal sulfamate solution formed from water, sulfamic acid and alkali metal base, wherein the pH of said aqueous alkali metal sulfamate solution is such that the pH of the resulting biocidal composition is at least 7.~~

11. A process for producing an aqueous biocidal composition by adding bromine chloride to an alkali metal sulfamate solution formed from water, sulfamic acid and alkali metal base, wherein the pH of said alkali metal sulfamate solution is in the range of about 13.0 to about 14.0 during said bromine chloride addition.

A similar showing is made below for cancelled Claim 6 and present Claim 21. Claim 6 is shown with strikethrough of the words that do not appear in present Claim 21, the independent claim; in Claim 21, the underlined words are those that did not appear in Claim 6.

~~6. A stabilized, bromine-based biocide prepared by adding bromine chloride to an overbased, alkali metal sulfamate solution formed from water, sulfamic acid and alkali metal base, and cooling the solution.~~

21. A stabilized aqueous biocidal formulation preparable by adding bromine chloride to an alkali metal sulfamate solution formed from water, sulfamic acid and alkali metal base, wherein the pH of said alkali metal sulfamate solution is in the range of about 13.0 to about 14.0 during said bromine chloride addition.

Thus, the present claims contain phrases that did not appear in the claims at the time of the Board's rejection of Claims 6-10. Applicants believe that the claims in their present form overcome both the rejection recommended by the Board and the rejection set forth in the present Office Action.

2.

At Page 3, lines 14-15, the Office Action correctly quotes Dallmier as disclosing a process that "improves on the Goodenough reference by means of a safer, easier, and more economical process" (column 2, lines 45-47). This quotation actually supports the position that Dallmier improves on the Goodenough disclosure by providing a safer, easier, and more economical process, *i.e.*, a **different process** from that of Goodenough. In other words, Dallmier does not present an improved version of the process of Goodenough. In fact, Dallmier points out the shortcomings of the Goodenough process, discards the Goodenough process, and provides as a replacement an entirely different process and product, which replacement process is stated to be safer, easier, and more economical than the process taught in Goodenough. Therefore, the process and product of Goodenough cannot be *modified* by Dallmier.

In this connection, the Response to Arguments section of the Office Action states that Applicants argue that Dallmier et al.'s process improves on the Goodenough et al.'s process, but not vice versa. (Office Action, Page 7, lines 12-13)

This is inaccurate. What was actually argued was that *Dallmier* says that their process is an improvement of the Goodenough process, and that these statements of Dallmier teach away from combination with Goodenough. Since the methods and materials of Dallmier and Goodenough are mutually exclusive, whether one is an improvement over the other is clearly subjective, since Dallmier eschews diatomic halogen sources, while Goodenough favored Br₂, a diatomic halogen source.

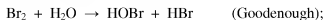
Turning now to one of the just-mentioned facets of the cited references, Goodenough uses bromine (Br₂) as the halogen source. In sharp contrast, Dallmier et al. does not use diatomic halogen molecules. Dallmier et al. solves the problem of the handling issues and corrosive nature of diatomic halogens (such as Br₂) by avoiding their use altogether. Dallmier accomplishes this by combining an aqueous hypochlorite solution and an aqueous bromide source (column 3, lines 59-61); the bromide source is typically a bromide salt, usually an alkali metal bromide salt (column 4, lines 33-36). Dallmier strongly discourages

use of bromine (Br_2), specifically as taught by Goodenough. For example, at column 2, lines 28-32, Dallmier states:

Because elemental bromine is used in the process disclosed in the Goodenough, et al. reference, this process is difficult to complete as well as potentially hazardous since elemental bromine is a fuming, corrosive, toxic liquid.

Thus, Dallmier explicitly teaches away from combination with Goodenough, and there is no reason for one of ordinary skill in the art to combine Dallmier et al. with Goodenough et al.

From the components added in Goodenough and Dallmier, respectively, the reactions that occur are generally accepted to be as shown (see *e.g.*, Dallmier, column 2, lines 41-42 and lines 60-61; Goodenough, column 1, lines 29-32):



These reactions are fundamentally different. Dallmier needs to add an oxidant to form the biocide, while Goodenough does not; Dallmier adds two substances to form the biocide; Goodenough only adds one. Also, the reaction of bromine with water is generally accepted to be instantaneous, while the reaction in Dallmier requires waiting for a period of time (column 3, lines 62-65, and Example 1 at column 7, lines 60-63). At a minimum, there is no bromide (Br^-) product in the Dallmier system, and no chlorine-containing oxidizer is added to the Goodenough system to form the biocide.

As the equations above indicate, Goodenough and Dallmier teach incompatible processes for forming bromine-based biocidal solutions. More specifically, Goodenough discloses that an aqueous solution of bromine is contacted with a bromine value stabilizer (*e.g.*, sulfamic acid) and sufficient hydroxide to form a solution having a pH of 8 to 10 (column 2, lines 1-6). Goodenough further states that the order of addition is not critical (column 2, lines 10-12). Conversely, the order of addition in Dallmier is critical, as pointed out in column 6, lines 33-36, and in column 7, lines 51-52. In Goodenough, Br_2 is the penultimate ingredient added (Example 3, solution B) or the last ingredient added (Example 3, solution A); in both instances, the stabilizer (sulfamic acid) is already present in the solution. Dallmier insists that the halogen be added first (column 3, lines 14-16, and column

8, lines 1-2) and, importantly, that a period of time pass before a stabilizer (alkali metal sulfamate) is added (column 4, lines 17-20, and column 8, lines 1-2).

Regarding the effect of pH, Dallmier explains:

The reaction of NaBr with NaOCl can yield significant amounts of bromate in elevated pH environments. (Column 10, lines 3-6).

Due to this tendency for formation of bromate from hypobromite in basic solution, Dallmier et al. necessarily stabilizes the hypobromite, once formed, before raising the pH of the solution. Thus, Dallmier leads away from the presently-claimed invention by discouraging the formation of a stabilized bromine biocide composition while at high pH values. This underscores the nonobviousness of the present claims, which involve no step of increasing the pH of a final solution, but instead provide a pH of about 13.0 to about 14.0 throughout the process.

Applying the improper combination of references to the present claims, the Office Action states that

It would have been obvious to modify Goodenough's process to include maintaining the pH of the solution from start to finish ranging from 13-14 as indicated in Dallmier. (Office Action, Page 6, lines 2-4.)

This is reiterated later in the Action:

"... by incorporating Dallmier et al.s' high pH in Goodenough et al.s' process ..." (Office Action, Page 8, lines 4-5.)

As just discussed, Dallmier discourages processes in which the pH is at a high value *during the process*. Combination with Goodenough does not alter this teaching. Because the respective products of Goodenough and Dallmier differ in composition, method, and final solution pH, there is no basis in either reference for suggesting that it would have been obvious to increase the pH of the Goodenough compositions to improve their stability. That Dallmier raises the pH value up to 14 is not a reason for combination with Goodenough, and does not overcome the disparate teachings of the two references or the clear discouragement of Goodenough's materials and methods by Dallmier. In addition, Inventor Nalepa has explained that having the pH at a very high value throughout the process, especially by adding the entire amount of base initially, provides biocidal solutions that have greater thermal stability than solutions obtained by initial preparation at lower pH values followed by

raising the pH to the final desired pH value (Paragraph 7 of the Declaration submitted on August 1, 2011).

On Page 4, lines 9-13, of the Office Action, the active bromine content of 100,000 ppm in Goodenough is alleged to make the presently claimed solutions obvious:

[T]he final bromine content of 100,000 ppmw bromine in Goodenough reads on the instantly claimed bromine content. For this reason, it is obvious that the solution yielded in Goodenough would be equivalent to the instant solution in terms of chemical and physical properties.

As discussed in previous Responses in this application and herein, the solution yielded in Goodenough is **not** equivalent to the instant solution in terms of chemical and physical properties. The chemical compositions of the claimed solutions are different than those of Goodenough, and the stabilities of the respective solutions are also different (*vide infra*). The active bromine concentration, without more, would not have made the presently claimed invention obvious to one of ordinary skill in the art over Goodenough. The present claims, as already described, have several features, one of which is the active bromine concentration. Furthermore, the claims as a whole must be considered, and not just their separate elements, as required by 35 U.S.C. §103. As stated by the Federal Circuit in *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1 U.S.P.Q.2d 1593, 1595-96 (Fed. Cir.), *cert. denied*, 481 U.S. 1052 (1987):

In making the assessment of differences, section 103 specifically requires consideration of the claimed invention "as a whole." Inventions typically are new combinations of existing principles or features...The "as a whole" instruction in title 35 prevents evaluation of the invention part by part. Without this important requirement, an obviousness assessment might break an invention into its component parts (A + B + C), then find a prior art reference containing A, another containing B, and another containing C, and on that basis alone declare the invention obvious. Section 103 precludes this hindsight discounting of the value of new combinations by requiring assessment of the invention as a whole.

It is submitted that focusing on certain features of the present claims alone ignores the requirement for considering the claims as a whole. Thus, the active bromine content is not a suitable basis from which to form or sustain an obviousness rejection of the present claims.

Also regarding the active bromine concentration, the Action states:

Note, it is obvious to optimize the amount of bromine in order to make the most effective biocide composition. (Office Action, Page 7, lines 5-6.)

Applicants are aware of the law on optimization of ranges. M.P.E.P. §2144.05, part III states that obviousness based on ranges may be rebutted by showing that the art, in any material respect, teaches away from the claimed invention. That is the case here. Goodenough mentions that the bromine values can reach 100,000 ppm (column 1, lines 39-42). Preferred bromine values in Goodenough have an upper limit of 50,000 ppm (column 2, lines 65-69). The Examples of Goodenough use $27\frac{1}{2}$ ppm (Table I); 1760 ppm or 1820 ppm (Table II); and about 10,000 ppm (Example 3, at column 4, lines 74-75). Goodenough thus encourages formation of solutions with significantly lower amounts of active bromine than 100,000 ppm. It would not have been obvious to one of ordinary skill in the art to make a solution with a high amount of active bromine, such as at least about 100,000 ppm, especially in light of Goodenough's remarks immediately following the disclosure of the upper limit of 100,000 ppm bromine values:

The bromine values in these solutions, however, are susceptible to decomposition during storage and prior to use and the solutions lose their beneficial properties. (Column 1, lines 42-45.)

This statement implies that such high concentrations of active bromine are wasteful, and thereby discourages high concentrations of active bromine. Thus, Claims 15 and 25, which are directed to active bromine concentrations of at least 100,000 ppm, are nonobvious over the cited references for this additional reason. Claims 13 and 23, directed to active bromine concentrations in the range of about 120,000 to about 180,000 ppm, are even further distinguished.

B.

The following two passages from the Office Action are related, and both are factually incorrect:

Goodenough et al. can produce N-chlorosulfamate. (Office Action, Page 5, line 14.)

Since the chemical composition is the same for the prior art invention and instant invention, ... (Office Action, Page 8, lines 13-14.)

In several previous Responses, discussions have been provided setting forth in detail that it is virtually impossible to form BrCl in the systems of Goodenough et al., and further that since

there is no oxidizing chlorine species (*e.g.*, Cl^+) in Goodenough, N-chlorosulfamate cannot be produced in Goodenough. These Responses have refuted the suggestion that Goodenough could make bromine chloride, both experimentally and on basis of established chemical principles known to those of skill in the art. Relevant portions of previous Responses are listed in the table below.

| Response filed | Discussion locations | Evidence |
|-------------------|---|--|
| November 20, 2007 | Page 12, first full paragraph | Specification, Exhibit 1073 ¹ |
| December 8, 2008 | Page 9, second full paragraph, through Page 10, paragraph below indented text | References attached |
| August 4, 2009 | Pages 6-7; Page 11, last full paragraph | References attached and already of record; Declaration (experiments) |
| June 23, 2010 | Page 6, third paragraph | Exhibit 1073 |
| December 17, 2010 | Page 5 (bottom) to Page 7, above section III | References attached and already of record |
| August 1, 2011 | Page 14, last two lines, to Page 15 (above second quoted excerpt); paragraph bridging Pages 15-16 | Declaration (UV data re-presented) |

It follows from the impossibility of forming BrCl (and N-chlorosulfamate therefrom) in the systems of Goodenough et al. that the chemical composition of the presently claimed compositions and formulations, which do contain N-chlorosulfamate, is different.

The Declaration filed on August 4, 2009, describes UV experiments in which HOCl and HBr are present; the UV spectra were recorded, and show the growth of the peak for HOBr ($\lambda_{\text{max}} = 330 \text{ nm}$) and the decrease of the peak for HOCl ($\lambda_{\text{max}} = 292 \text{ nm}$) over time (Declaration, paragraph 5). Upon further review, since the spectra were all placed on one graph and reproduced in black and white in the Declaration, it was deemed advisable to show each UV spectrum separately. They were so presented in the Declaration filed on August 1, 2011, to more clearly demonstrate that HOCl oxidizes Br^- to HOBr and Cl^- , and that no back-reaction to form HOCl from HOBr and Cl^- occurs. Any back-reaction to form HOCl

¹ Refers to exhibit number in Interference No. 105,230; also referred to as the Second Declaration of McKinnie.

would have been accompanied by an increase in the peak at 292 nm in the UV spectra; no such increase was observed (see also paragraphs 11-15 and the graph in the Declaration filed August 4, 2009, and paragraphs 10-13 and the graphs in the Declaration filed August 1, 2011).

On a related point, the Office Action complains that

Applicants do not show a true representation of BrCl in the claims, i.e. a mixture of BrCl, Br₂ and Cl₂. (Office Action, Page 5, lines 8-12)

As detailed in some of the previously-filed Responses in this application,² BrCl is known in the art to be an equilibrium mixture of BrCl, Br₂, and Cl₂. Because it is well established in the art that BrCl is an equilibrium mixture of BrCl, Br₂, and Cl₂ (see *e.g.*, Mills et al., "Bromine Chloride: an Alternative to Bromine," *Ind. Eng. Chem. Prod. Res. Develop.*, 1973, **12**, 160-165), Applicants need not set forth this definition in the claims. This position is supported by the Federal Circuit:

The ordinary and customary meaning of a term may be evidenced by a variety of sources, including "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314, 75 U.S.P.Q.2d 1321, 1327 (Fed. Cir. 2005) (*en banc*).

Applicants submit that the prosecution history and extrinsic evidence (*e.g.*, the Mills et al. reference, other references of record, and some of the Interference No. 105,230 exhibits) make clear that it is known in the art that BrCl is an equilibrium mixture of BrCl, Br₂, and Cl₂. Thus, the term "bromine chloride" in the claims is understood by those of skill in the art to mean that the equilibrium mixture that normally makes up BrCl.

C.

The present Office Action repeatedly requests a side-by-side comparison with Goodenough, and unexpected results from Applicants. Such results were presented in the Declaration of Inventor Nalepa filed on August 4, 2009, and discussed in the accompanying Response filed on the same date, as well as in subsequent Responses. For ease of reference, Table 2 of the Declaration filed on August 4, 2009, which shows the results obtained, is

² Those filed December 8, 2008 (Page 8, last full paragraph to Page 9, first full paragraph); December 17, 2010 (Pages 3-5); and August 1, 2011 (Page 5, first paragraph).

reproduced here.

| Solution | Initial activity | Activity after 4 days | Activity retained |
|---------------------------------------|---------------------------|---------------------------|-------------------|
| Solution 1 - $\text{Mg}(\text{OH})_2$ | 9560 ppm Br_2 | 9290 ppm Br_2 | 97% |
| Solution 2 - NaOH | 9610 ppm Br_2 | 6600 ppm Br_2 | 69% |
| Solution 3 - NaOH | 149,000 ppm Br_2 | 150,000 ppm Br_2 | 99% |

It is noted that the Action again relies on the incorrect premise that BrCl is formed in the systems of Goodenough as a justification for ignoring the evidence presented by Applicants.

The Examiner reiterates that the results in the Table [in the Declaration of Nalepa submitted on August 4, 2009] are not convincing since the Table shows only Bromine for the two Goodenough et al. examples instead of the BrCl that can be automatically derived from Goodenough et al combination of chemicals (sulfamic acid, calcium chloride or sodium chloride and bromine). (Office Action, Page 6, lines 14-18.)

Because of this flawed premise (that BrCl is formed in Goodenough, see section B above), Applicants respectfully request the results presented in the Declaration of August 4, 2009, be properly considered.

Another attempt to dismiss Applicants' evidence is made by linking it to the alleged obviousness of the active bromine concentration.

Until a side-by-side comparison is done, the instant combination of references makes the 12 wt % - 18 wt % active bromine obvious. (Office Action, Page 9, lines 1-3)

As discussed above (see section A.2.), the claimed active bromine concentration ranges are not obvious, particularly the 12 wt% to 18 wt% of Claims 13 and 23. It is thus improper to ignore Applicants' evidence on this basis.

Focusing on the evidence itself, the Office now takes the positions that

This Table [in the Declaration of Nalepa submitted on August 4, 2009] does not appear to show a side by side comparison of instant invention versus Goodenough et al.'s invention (Office Action, Page 6, lines 21-22.)

In the absence of an unexpected showing for the instant ordering of steps, the

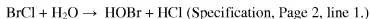
combination of Goodenough and Dallmier make instant ordering of steps obvious. (Office Action, Page 8, lines 8-9.)

Applicants submit that the Response and accompanying Declaration filed on August 4, 2009, provided arguments and evidence that successfully overcame the rejection extant in the case at that time. Since the Declaration was effective to overcome the rejection of Goodenough in combination with several of the Interference exhibits (Declaration of August 4, 2009), it is not understood why does this Declaration does not work here (as to Goodenough, since the request for a side-by-side comparison is addressed only to the Goodenough reference).

More particularly, a side-by-side comparison with Goodenough was provided. Referring to the Declaration of Inventor Nalepa filed on August 4, 2009, Solution 1 of the Declaration repeated the solution of Goodenough's Solution B of Example 3, which used $\text{Mg}(\text{OH})_2$, and Solution 2 of the Declaration was the same, except that an equivalent amount of NaOH was substituted for the $\text{Mg}(\text{OH})_2$ (Declaration, paragraph 5). Reagents for Solutions 1 and 2 were added in the order listed in Table 1 (paragraph 6). Solution 3 was prepared according to the present claims, by adding BrCl to an overbased, alkali metal sulfamate solution (paragraph 7). The solutions prepared according to Goodenough and an inventive solution were subjected to the same stability test, for which results are reported in Table 2 of the Declaration.

The repeated preparation of Solution B from Goodenough's Example 3, and the analogous preparation with NaOH, as described in the Declaration of Nalepa, provided interesting results. In particular, the stability (as measured by activity in ppm Br_2) is significantly **lower** for solution made with sodium hydroxide. After four days, the solution prepared with NaOH retained only 69% of its original activity, while the solution prepared with $\text{Mg}(\text{OH})_2$ as in Goodenough retained 97% of its original activity (Declaration of Nalepa, paragraph 9, Table 2). Thus, a side-by-side comparison with Goodenough has been made, and unexpected results have been shown – much higher retention of activity in the inventive solution, which used an alkali metal base; see Solution 3, which retained 97% of activity after 63 days.

In this regard, Applicants note that the Action again asks about the different moles of hydroxide in the inventive run as compared to those in the repeated runs of Goodenough in the Declaration filed on August 4, 2009 (Office Action, Page 8, lines 20-22). There are two factors contributing to this. First, as a diatomic halogen is added to water, the hydrolysis reaction makes acid, thereby decreasing the pH of the solution:



Therefore, as a greater amount of halogen is added, the pH decreases further because more acid is produced from the hydrolysis reaction. Referring now to Table 1 of the Declaration filed on August 4, 2009, Solutions 1 and 2 of Goodenough employed 0.031 moles of diatomic halogen (Br_2) and 0.125 moles of hydroxide. Solution 3 (inventive) employed 0.491 moles of diatomic halogen (BrCl) and 2.025 moles of hydroxide. The amount of diatomic halogen used in preparing Solution 3 was 15.8 times greater³ than for Solutions 1 and 2. While not necessarily a quantitative guide, to reach a similar pH to those of Solutions 1 and 2 should theoretically take at least 15.8 times the amount of hydroxide, which in this instance is 1.975 moles of hydroxide,⁴ and is only 0.050 moles less than the amount actually used in Solution 3. The second factor is the higher pH achieved in Solution 3, which requires a greater amount of hydroxide. Therefore, the larger number of moles of hydroxide in the inventive run (Solution 3) in the Declaration is explained by the larger amount of halogen added to the inventive solution, and by the higher pH of the inventive solution (13.47) as compared to the solutions prepared according to Goodenough (pH values of 8.75 and 11.55, respectively).

Applicants respectfully request reconsideration and withdrawal of this rejection in light of the above amendments and remarks.

If any matters remain that require further consideration, the Examiner is requested to telephone the undersigned at the number given below so that such matters may be discussed, and if possible, promptly resolved.

³ Obtained from $0.491 \text{ moles} \div 0.031 \text{ moles} = 15.8$.

⁴ Obtained from $0.125 \text{ moles hydroxide} \times 15.8 = 1.975 \text{ moles hydroxide}$.

Please continue to address all correspondence in this Application to Albemarle Corporation, at the address of record.

Respectfully submitted,

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